

GenCore version 5.1.6  
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OM protein - protein search, using sw model

Run on: August 28, 2003, 01:15:34 ; Search time 69 Seconds  
(without alignments)  
540.591 Million cell updates/sec

Title: US-09-308-829-2

Perfect score: 1232  
Sequence: 1 MKKINIKIVFITVILIST.....KDNRIIMKNKSHFDYLEK 235

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 1107863 seqs, 158726573 residues

Total number of hits satisfying chosen parameters: 1107863

Minimum DB seq length: 0

Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A.Geneseq\_19Jun03:\*

1: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1980.DAT:\*  
2: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1981.DAT:\*  
3: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1982.DAT:\*  
4: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1983.DAT:\*  
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6: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1985.DAT:\*  
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8: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1987.DAT:\*  
9: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1988.DAT:\*  
10: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1989.DAT:\*  
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12: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1991.DAT:\*  
13: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1992.DAT:\*  
14: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1993.DAT:\*  
15: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1994.DAT:\*  
16: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1995.DAT:\*  
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18: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1997.DAT:\*  
19: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA1998.DAT:\*  
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21: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA2000.DAT:\*  
22: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA2001.DAT:\*  
23: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA2002.DAT:\*  
24: /SIDSI/gcgdata/geneseq/geneseq-emb1/AA2003.DAT:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysts of the total score distribution.

# SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	1232	100.0	235	19	AA662784
2	1215	98.6	235	19	AA662787
3	1215	98.6	235	19	AA662788
4	1182	95.9	235	23	ABP29257
5	1166	94.6	235	19	AA662785
6	1165	94.6	235	19	AA662786
7	1100	89.3	208	12	AA13240
8	1100	89.3	208	14	AA45018
9	1100	89.3	208	22	AA67345

10	1100	89.3	208	23	AB676241	Staphylococcus pyo
11	1095	88.9	207	23	AAE25364	Streptococcus pyog
12	1091	88.6	207	23	AAE25373	S. pyogenes pyroge
13	1086	88.1	207	23	AAE25368	S. pyogenes pyroge
14	1086	88.1	207	23	AAE25374	S. pyogenes pyroge
15	1086	88.1	207	23	AAE25395	S. pyogenes pyroge
16	1085	88.1	207	23	AAE25370	S. pyogenes pyroge
17	1082	87.8	207	23	AAE25367	S. pyogenes pyroge
18	1076	87.3	207	23	AAE25372	S. pyogenes pyroge
19	1072	87.0	207	23	AAE25371	S. pyogenes pyroge
20	1067	86.6	207	23	AAE25369	S. pyogenes pyroge
21	1063	86.3	207	23	AAE25365	S. pyogenes pyroge
22	670.5	54.4	143	23	AAE25363	Streptococcus pyog
23	556	45.1	232	23	ABP29143	Streptococcus poly
24	394.5	32.0	234	21	AA93742	Amino acid sequenc
25	394.5	32.0	234	23	ABP29092	Streptococcus poly
26	391.5	31.8	137	21	AA93741	Amino acid sequenc
27	296	24.0	233	21	AA93741	Amino acid sequenc
28	279	22.6	258	23	ABP29565	Streptococcus poly
29	215	17.5	70	23	ABP29293	Streptococcus poly
30	211	17.1	69	23	ABP29986	Streptococcus poly
31	211	17.1	251	21	AA770109	Streptococcus pyro
32	211	17.1	251	23	ABP79508	Streptococcus pyro
33	210	17.0	221	12	AA13209	Streptococcus pyro
34	210	17.0	221	14	AA45017	Staphylococcus ent
35	210	17.0	221	23	ABP76240	Staphylococcus ent
36	210	17.0	251	18	AA12151	Streptococcus pyog
37	210	17.0	251	18	AA12152	Streptococcus pyog
38	210	17.0	251	18	AA12153	Streptococcus pyog
39	210	17.0	251	18	AA12146	Streptococcus pyog
40	210	17.0	251	18	AA12097	Streptococcus pyog
41	210	17.0	251	19	AA59780	Amino acid sequenc
42	209.5	17.0	228	14	AA45013	Staphylococcus ent
43	209.5	17.0	228	22	AA67340	Staphylococcus ent
44	209.5	17.0	228	23	ABP76236	Staphylococcus ent
45	209.5	17.0	250	18	AA12145	Streptococcus pyog

## ALIGNMENTS

RESULT 1	AA662784 standard; Protein; 235 AA.
ID	AA662784
AC	AA662784:
XX	
DT	24-SEP-1998 (first entry)
XX	
DE	Streptococcus pyrogenic exotoxin type C (SPE-C).
XX	
KW	Streptococcus pyrogenic exotoxin type C; SPE-C toxin; STSS;
KW	Streptococcus toxic shock syndrome; mutant; vaccine.
XX	
OS	Streptococcus pyogenes.
XX	
FH	Key
FT	Peptide
FT	Location/Qualifiers
FT	/note="signal peptide"
FT	28..235
FT	/note="mature protein"
XX	
PN	W09824910-A2.
XX	
PD	11-JUN-1998.
XX	
XX	05-DEC-1997; 97WO-US22125.
XX	
PR	06-DEC-1996; 96US-0033251.
XX	
PA	(MINU ) UNIV MINNESOTA.
XX	
PI	Gahr PJ, Mitchell DT, Ohlendorf D, Schlievert PM;

XX WPI: 1998-33329/29.  
 DR N-PSDB; AAV42209.  
 XX  
 PT Mutant non-lethal Streptococcus pyrogenic exotoxin type C - useful  
 PT for vaccines to protect from biological activity of wild type toxin  
 PT e.g. to prevent or ameliorate streptococcal toxic shock syndrome  
 XX  
 PS Disclosure; Fig 1; 55pp; English.  
 XX  
 CC The present sequence represents a Streptococcus pyrogenic exotoxin type  
 CC C (SPE-C) toxin. Streptococcus pyrogenes is a pathogen of humans which  
 CC can cause mild infections e.g. impetigo or severe acute diseases e.g.  
 CC scarlet fever and STSS. SPE-C is thought to be associated with  
 CC streptococcal toxic shock syndrome (STSS) and has several proposed  
 CC biological activities, e.g. has been shown to block liver clearance of  
 CC endotoxin and act as a "superantigen" i.e. induce T lymphocytes  
 CC proliferation, resulting in abnormally high levels of circulating  
 CC cytokines TNF- beta and IFN- gamma. The SPE-C protein is mutated (see  
 CC AAM62785-88) to make it substantially non-lethal compared to wild-type  
 CC SPE-C toxin. The mutant toxins are useful in vaccines which can be  
 CC administered to animals (especially humans) to protect against at least  
 CC one biological activity of a wild-type SPE-C. Such vaccines are  
 CC especially useful to reduce symptoms associated with toxic shock such as  
 CC STSS in humans.  
 CC  
 XX  
 SQ Sequence 235 AA;  
 Query Match 100.0%; Score 1232; DB 19; Length 235;  
 Best Local Similarity 100.0%; Pred. No. 1e-113;  
 Matches 235; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 1 MKKINIKIVFITVILISTYFTYHQSCKDISNVKSDLLVATTPYDKCRVNFST 60  
 Db 1 MKKINIKIVFITVILISTYFTYHQSCKDISNVKSDLLVATTPYDKCRVNFST 60  
 QY 61 THTLNDTQKYRGKDYIISSEMSYEASQKFRDHDVDFGLFYILNSHGEYIGGITPA 120  
 Db 61 THTLNDTQKYRGKDYIISSEMSYEASQKFRDHDVDFGLFYILNSHGEYIGGITPA 120  
 QY 121 QNNKVNHLKLGNIIFISGESQONLNKILIEKDIVTFOEIDFKIRKYLMDNYKITYDATSPY 180  
 Db 121 QNNKVNHLKLGNIIFISGESQONLNKILIEKDIVTFOEIDFKIRKYLMDNYKITYDATSPY 180  
 QY 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNSHFDIYLEK 235  
 Db 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNSHFDIYLEK 235  
 RESULT 2  
 AAM62787  
 ID AAM62787 standard; Protein; 235 AA.  
 XX  
 AC AAM62787;  
 XX  
 DT 24-SEP-1998 (first entry)  
 XX  
 DE Mutant streptococcal pyrogenic exotoxin type C (SPE-C).  
 XX  
 KW Streptococcus pyrogenic exotoxin type C; SPE-C toxin; STSS;  
 KW streptococcal toxic shock syndrome; mutant; vaccine.  
 XX  
 OS Streptococcus pyrogenes.  
 XX  
 FH Key Location/Qualifiers  
 FT Peptide 1..27  
 FT Protein /note="signal peptide"  
 FT Protein 28..235  
 FT Protein /note="mature protein"  
 FT Misc-difference 42  
 FT /label="Y15A  
 FT /note="Tyr at position 15 of the mature protein

FT FT substituted with Ala"  
 FT Misc-difference 65  
 FT /label="N38A  
 FT /note="Asn at position 38 of the mature protein  
 FT substituted with Ala"  
 XX  
 PN WO9824910-A2.  
 XX  
 PD 11-JUN-1998.  
 XX  
 PE 05-DEC-1997; 97WO-US22125.  
 XX  
 PR 06-DEC-1996; 96US-0033251.  
 XX  
 PA (MINU ) UNIV MINNESOTA.  
 XX  
 PI Gahr PJ, Mitchell DT, Ohlendorf D, Schlievert PM;  
 DR WPI: 1998-33329/29.  
 XX  
 PT Mutant non-lethal Streptococcus pyrogenic exotoxin type C - useful  
 PT for vaccines to protect from biological activity of wild type toxin  
 PT e.g. to prevent or ameliorate streptococcal toxic shock syndrome  
 XX  
 PS Claim 7; Page -: 55pp; English.  
 XX  
 CC The present sequence represents a mutant Streptococcus pyrogenic  
 CC exotoxin type C (SPE-C) toxin. Streptococcus pyrogenes is a pathogen  
 CC of humans which can cause mild infections e.g. impetigo or severe acute  
 CC diseases SPE-C is thought to be associated with streptococcal toxic  
 CC shock syndrome (STSS) and has several proposed biological activities,  
 CC e.g. has been shown to block liver clearance of endotoxin and act  
 CC as a "superantigen" i.e. induce T lymphocytes proliferation, resulting  
 CC in abnormally high levels of circulating cytokines TNF- beta and  
 CC IFN- gamma. The mutant toxins are useful in vaccines which can be  
 CC administered to animals (especially humans) to protect against at  
 CC least one biological activity of a wild-type SPE-C. Such vaccines are  
 CC especially useful to reduce symptoms associated with toxic shock such  
 CC as STSS in humans.  
 CC note: this sequence does not appear in the specification; it was created  
 CC using information provided.  
 CC  
 XX  
 SQ Sequence 235 AA;  
 Query Match 98.6%; Score 1215; DB 19; Length 235;  
 Best Local Similarity 99.1%; Pred. No. 5e-112;  
 Matches 233; Conservative 0; Mismatches 2; Indels 0; Gaps 0;  
 QY 1 MKKINIKIVFITVILISTYFTYHQSCKDISNVKSDLLVATTPYDKCRVNFST 60  
 Db 1 MKKINIKIVFITVILISTYFTYHQSCKDISNVKSDLLVATTPYDKCRVNFST 60  
 QY 61 THTLNDTQKYRGKDYIISSEMSYEASQKFRDHDVDFGLFYILNSHGEYIGGITPA 120  
 Db 61 THTLNDTQKYRGKDYIISSEMSYEASQKFRDHDVDFGLFYILNSHGEYIGGITPA 120  
 QY 121 QNNKVNHLKLGNIIFISGESQONLNKILIEKDIVTFOEIDFKIRKYLMDNYKITYDATSPY 180  
 Db 121 QNNKVNHLKLGNIIFISGESQONLNKILIEKDIVTFOEIDFKIRKYLMDNYKITYDATSPY 180  
 QY 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNSHFDIYLEK 235  
 Db 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNSHFDIYLEK 235  
 RESULT 3  
 AAM62788  
 ID AAM62788 standard; Protein; 235 AA.  
 XX  
 AC AAM62788;  
 XX  
 DT 24-SEP-1998 (first entry)  
 XX

DE	XX	Mutant streptococcal pyrogenic exotoxin type C (SPE-C).
KW	XX	Streptococcus pyrogenic exotoxin type C; SPE-C toxin; STSS;
KW	XX	streptococcal toxic shock syndrome; mutant; vaccine.
OS	XX	Streptococcus pyrogenes.
FT	FT	Key
FT	FT	Location/Qualifiers
FT	FT	1..27
FT	FT	/note= "signal peptide"
FT	FT	28..235
FT	FT	/note= "mature protein"
FT	FT	optionally substituted with Ala"
FT	FT	Misc-difference 44
FT	FT	/label= Y17A
FT	FT	/note= "Tyr at position 17 of the mature protein
FT	FT	substituted with Ala"
FT	FT	Misc-difference 65
FT	FT	/label= N38A
FT	FT	/note= "Asn at position 38 of the mature protein
FT	FT	substituted with Ala"
XX	XX	W09824910-A2.
XX	XX	11-JUN-1998.
XX	XX	05-DEC-1997; 97WO-US22125.
XX	XX	06-DEC-1996; 96US-0033251.
XX	XX	(MINU ) UNIV MINNESOTA.
XX	XX	Gahr PJ, Mitchell DT, Ohlendorf D, Schlievert PM;
XX	XX	WPI; 1998-333329/29.
XX	XX	Mutant non-lethal Streptococcus pyrogenic exotoxin type C - useful
XX	XX	for vaccines to protect from biological activity of wild type toxin
XX	XX	e.g. to prevent or ameliorate streptococcal toxic shock syndrome
XX	XX	Claim 9; Page -; 55pp; English.
XX	XX	The present sequence represents a mutant Streptococcus pyrogenic
XX	XX	exotoxin type C (SPE-C) toxin. Streptococcus pyrogenes is a pathogen
XX	XX	of humans which can cause mild infections e.g. impetigo or severe acute
XX	XX	diseases SPE-C is thought to be associated with streptococcal toxic
XX	XX	shock syndrome (STSS) and has several proposed biological activities,
XX	XX	e.g. has been shown to block liver clearance of endotoxin and act
XX	XX	as a "superantigen" i.e. induce T lymphocytes proliferation, resulting
XX	XX	in abnormally high levels of circulating cytokines TNF- beta and
XX	XX	IFN- gamma. The mutant toxins are useful in vaccines which can be
XX	XX	administered to animals (especially humans) to protect against at
XX	XX	least one biological activity of a wild-type SPE-C. Such vaccines are
XX	XX	especially useful to reduce symptoms associated with toxic shock such
XX	XX	as STSS in humans.
XX	XX	note: this sequence does not appear in the specification; it was created
XX	XX	using information provided.
XX	XX	Sequence 235 AA;
XX	XX	Query Match 98.6%; Score 1215; DB 19; Length 235;
XX	XX	Best Local Similarity 99.1%; Pred. No. 5e-112;
XX	XX	Matches 233; Conservative 0; Mismatches 2; Indels 0; Gaps 0
XX	XX	1 MKKNIIRIVITIVVILISTFYTHQSSKDISNVKSDLYAVITTPDYDCRVNFT 60
XX	XX	
XX	XX	1 MKKNIIRIVITIVVILISTFYTHQSSKDISNVKSDLYAVITTPDYDCRVNFT 60
XX	XX	
XX	XX	61 THTLINDTQKRGKRDYIISSEMSYEASQKFRDDVDVDFGLFYILNSHTGEYIGGTPA 120
XX	XX	
XX	XX	61 THTLADTQKRGKRDYIISSEMSYEASQKFRDDVDVDFGLFYILNSHTGEYIGGTPA 120
XX	XX	
XX	XX	121 ONKRVNHLKGLNLFISGESQONLNKKIILEKDIYFQETIDFKIRRYLMDNRYIKATPSY 180

Db	121	QNNKVVNKKLLGNLTISGESQNLNNKILLEDIYTFQGLDKIRKYLMDNKKIYDTSPT	180
QY	181	VSGRIEIGTKDGKHEQIDLPDSPNEGTRSDIFAKYKDNRIINMKNFSPHDIYLEK	235
Db	181	VSGRIEIGTKDGKHEQIDLPDSPNEGTRSDIFAKYKDNRIINMKNFSPHDIYLEK	235
RESULT 4			
ABP29257	ID	ABP29257 standard; Protein: 235 AA.	
XX	AC	ABP29257;	
XX	DT	02-JUL-2002 (first entry)	
XX	DE	Streptococcus polypeptide SEQ ID NO 7690.	
XX	KW	Streptococcus: GAS; group B streptococcus; Streptococcus agalactiae;	
KW	KM	group A streptococcus; Streptococcus pyogenes; antibacterial;	
KM	XX	antiinflammatory; Infection; vaccine; meningitis; gene therapy.	
OS	XX	Streptococcus pyogenes.	
XX	PN	MO200234771-A2.	
PD	XX	02-MAY-2002.	
XX	PF	29-OCT-2001; 2001WO-GB04789.	
XX	PR	27-OCT-2000; 2000GB-0026333.	
PR	PR	24-NOV-2000; 2000GB-0028727.	
PR	PR	07-MAR-2001; 2001GB-0005640.	
XX	PA	(CHIR-) CHIRON SPA.	
XX	PA	(GENO-) INST GENOMIC RES.	
PI	PI	Telford J, Masignani V, Margarit Ros YI, Grandi G, Fraser C;	
PI	PI	Tettelin H;	
XX	DR	WPI: 2002-352536/38.	
XX	DR	N-PSDB; ABN69888.	
PT	PT	New Streptococcus protein for the treatment or prevention of infection	
PT	PT	or disease caused by Streptococcus bacteria, such as meningitis, and	
PT	PT	for detecting a compound that binds to the protein -	
PS	PS	Claim 1; Page 3906; 4525pp; English.	
XX	XX	The invention relates to a protein (ABP25413-ABP30895) from group B	
CC	CC	streptococcus/GAS (Streptococcus agalactiae) or group A streptococcus/GAS	
CC	CC	(Streptococcus pyogenes), comprising one of 5483 sequences (S1), given in	
CC	CC	the specification. The proteins have antibacterial and antiinflammatory	
CC	CC	activities (I), nucleic acids encoding (I), ABN66044-ABN71526 and	
CC	CC	antibodies that bind (I) are used in the manufacture of medicaments for	
CC	CC	the treatment or prevention of infection or disease caused by	
CC	CC	Streptococcus bacteria, particularly S. agalactiae and S. pyogenes.	
CC	CC	Nucleic acids encoding (I) are used to detect Streptococcus in a	
CC	CC	biological sample. (I) is used to determine whether a compound binds to	
CC	CC	(I). A composition comprising (I) or a nucleic acid encoding (I), may be	
CC	CC	used as a vaccine or diagnostic composition. The disease caused by	
CC	CC	Streptococcus that is prevented or treated may be meningitis. Nucleic	
CC	CC	acid encoding (I) may be used to recombinantly produce (I) and may be	
CC	CC	used in gene therapy. Antibodies to (I) are used for affinity	
CC	CC	chromatography, immunoassays, and distinguishing/identifying	
CC	CC	Streptococcus proteins.	
XX	XX	Sequence 235 AA;	
XX	XX	Query Match 95.9%; Score 1182; DB 23; Length 235;	
XX	XX	Best Local Similarity 97.0%; Pred. No.9.3e-109;	
XX	XX	Matches 228; Conservative 2; Mismatches 5; Indels 0; Gaps 0;	

QY 1 MKKINIKIVFIIIVILISTFYTHQSDSKDISNVKSDLLYAVTTPYDKDCRVNFS 60  
 DB 1 MKKINIKIVFIIIVILISTFYTHQSDSKDISNVKSDLLYAVTTPYDKDCRVNFS 60  
 QY 61 THTLNDIDOKYRGKDYISSEMSEYASQKFRDHDVDFGLFYILNSHTGEYIYGCTPA 120  
 DB 61 THTLNDIDOKYRGKDYISSEMSEYASQKFRDHDVDFGLFYILNSHTGEYIYGCTPA 120  
 QY 121 QNNKVNHRKLGNLFISSGSOQNLNNKILLEDIYTFQEIPIRKYLMNDYKIYDATSPY 180  
 DB 121 QNNKVNHRKLGNLFISSGSOQNLNNKILLEDIYTFQEIPIRKYLMNDYKIYDATSPY 180  
 QY 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNFHFIDYLEK 235  
 DB 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNFHFIDYLEK 235

RESULT 5  
 AAW62785  
 ID AAW62785 standard; Protein; 235 AA.  
 AC AAW62785;  
 DT 24-SEP-1998 (first entry)  
 DE Mutant streptococcal pyrogenic exotoxin type C (SPE-C).  
 XX Streptococcus pyrogenic exotoxin type C; SPE-C toxin; STSS;  
 KW streptococcal toxic shock syndrome; mutant; vaccine.  
 OS Streptococcus pyrogenes.  
 XX  
 FH Key  
 FH Peptide  
 FT 1..27 Location/Qualifiers  
 FT /note= "signal peptide"  
 FT 28..235  
 FT /note= "mature protein"  
 FT /note= "Asp at position 12 of the mature protein  
 FT optionally substituted with Ala, Glu, Asn,  
 FT Glu, Lys, Arg, Ser or Thr"  
 FT  
 FT /note= "Tyr at position 15 of the mature protein  
 FT optionally substituted with Phe, Ala, Gly,  
 FT Ser or Thr"  
 FT  
 FT /note= "Tyr at position 17 of the mature protein  
 FT optionally substituted with Phe, Ala, Gly, Glu,  
 FT Lys, Arg, Asp, Ser or Thr"  
 FT  
 FT /note= "His at position 35 of the mature protein  
 FT optionally substituted with Phe, Ala, Gly, Glu,  
 FT Lys, Arg, Asp, Ser, Tyr or Thr"  
 FT  
 FT /note= "Asn at position 38 of the mature protein  
 FT optionally substituted with Ala, Asp, Glu,  
 FT Lys or Arg"  
 FT  
 FT /note= "Lys at position 135 of the mature protein  
 FT optionally substituted with Asp or Glu"  
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 FT /note= "Lys at position 138 of the mature protein  
 FT optionally substituted with Asp or Glu"  
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 FT /note= "Tyr at position 139 of the mature protein  
 FT optionally substituted with Phe, Ala, Gly,  
 FT Glu, Lys, Arg, Asp, Ser or Thr"  
 FT  
 FT /note= "Asp at position 142 of the mature protein  
 FT optionally substituted with Ala, Glu,  
 FT Glu, Lys, Arg, Asn, Ser or Thr"  
 FT  
 FT  
 PM W09824910-A2.

XX 11-JUN-1998.  
 PD  
 XX  
 PF 05-DEC-1997; 97MO-US22125.  
 XX  
 PR 06-DEC-1996; 96US-0033251.  
 XX  
 PA (MINU ) UNIV MINNESOTA.  
 PI Gahr PJ, Mitchell DT, Ohlendorf D, Schlievert PM;  
 XX  
 DR WPI; 1998-333329/29.  
 XX  
 PT Mutant non-lethal Streptococcus pyrogenic exotoxin type C - useful  
 PT for vaccines to protect from biological activity of wild type toxin  
 PT e.g. to prevent or ameliorate streptococcal toxic shock syndrome  
 XX  
 PS Claim 4; Page -: 55pp; English.  
 CC  
 CC The present sequence represents a mutant Streptococcus pyrogenic  
 CC exotoxin type C (SPE-C) toxin. Streptococcus pyrogenes is a pathogen  
 CC of humans which can cause mild infections e.g. Impetigo or severe acute  
 CC diseases SPE-C is thought to be associated with streptococcal toxic  
 CC shock syndrome (STSS) and has several proposed biological activities,  
 CC e.g. has been shown to block liver clearance of endotoxin and act  
 CC as a "superantigen" i.e. induce T lymphocytes proliferation, resulting  
 CC in abnormally high levels of circulating cytokines TNF- beta and  
 CC IFN- gamma. The mutant toxins are useful in vaccines which can be  
 CC administered to animals (especially humans) to protect against at  
 CC least one biological activity of a wild-type SPE-C. Such vaccines are  
 CC especially useful to reduce symptoms associated with toxic shock such  
 CC as STSS in humans.  
 CC note: this sequence does not appear in the specification; it was created  
 CC using information provided.  
 CC  
 SQ Sequence 235 AA:  
 Query Match 94.6%; Score 1166; DB 19; Length 235;  
 Best Local Similarity 96.2%; Pred. No. 3.6e-107;  
 Matches 226; Conservative 0; Mismatches 9; Indels 0; Gaps 0;  
 QY 1 MKKINIKIVFIIIVILISTFYTHQSDSKDISNVKSDLLYAVTTPYDKDCRVNFS 60  
 DB 1 MKKINIKIVFIIIVILISTFYTHQSDSKDISNVKSDLLYAVTTPYDKDCRVNFS 60  
 QY 61 THTLNDIDOKYRGKDYISSEMSEYASQKFRDHDVDFGLFYILNSHTGEYIYGCTPA 120  
 DB 61 THTLNDIDOKYRGKDYISSEMSEYASQKFRDHDVDFGLFYILNSHTGEYIYGCTPA 120  
 QY 121 QNNKVNHRKLGNLFISSGSOQNLNNKILLEDIYTFQEIPIRKYLMNDYKIYDATSPY 180  
 DB 121 QNNKVNHRKLGNLFISSGSOQNLNNKILLEDIYTFQEIPIRKYLMNDYKIYDATSPY 180  
 QY 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNFHFIDYLEK 235  
 DB 181 VSGRIEIGTKDGKHEQIDLFDSPEGTRSDIFAKYKDNRIINMKNFHFIDYLEK 235

RESULT 6  
 AAW62786  
 ID AAW62786 standard; Protein; 235 AA.  
 AC AAW62786;  
 DT 24-SEP-1998 (first entry)  
 DE Mutant streptococcal pyrogenic exotoxin type C (SPE-C).  
 XX Streptococcus pyrogenic exotoxin type C; SPE-C toxin; STSS;  
 KW streptococcal toxic shock syndrome; mutant; vaccine.  
 OS Streptococcus pyrogenes.  
 XX

EH Key Location/Qualifiers  
 FT Peptide 1..27  
 FT /note= "signal peptide"  
 FT Protein 28..235  
 FT /note= "mature protein"  
 FT Misc-difference 39  
 FT /label= D12A  
 FT /note= "Asp at position 12 of the mature protein  
 FT optionally substituted with Ala"  
 FT Misc-difference 42  
 FT /label= Y15A  
 FT /note= "Tyr at position 15 of the mature protein  
 FT optionally substituted with Ala"  
 FT Misc-difference 44  
 FT /label= Y17A  
 FT /note= "Tyr at position 17 of the mature protein  
 FT optionally substituted with Ala"  
 FT Misc-difference 62  
 FT /label= H35A  
 FT /note= "His at position 35 of the mature protein  
 FT optionally substituted with Ala"  
 FT Misc-difference 65  
 FT /label= N38D  
 FT /note= "Asn at position 38 of the mature protein  
 FT optionally substituted with Asp"  
 FT Misc-difference 162  
 FT /label= K135D  
 FT /note= "Lys at position 135 of the mature protein  
 FT optionally substituted with Asp"  
 FT Misc-difference 165  
 FT /label= K138D  
 FT /note= "Lys at position 138 of the mature protein  
 FT optionally substituted with Asp"  
 FT Misc-difference 166  
 FT /label= Y139A  
 FT /note= "Tyr at position 139 of the mature protein  
 FT optionally substituted with Ala"  
 FT Misc-difference 169  
 FT /label= D142N  
 FT /note= "Asp at position 142 of the mature protein  
 FT optionally substituted with Asp"  
 FT WO9824910-A2.  
 XX 11-JUN-1998.  
 PD  
 XX 05-DEC-1997; 97WO-US22125.  
 XX  
 XX 06-DEC-1996; 96US-003251.  
 XX  
 XX (MINU ) UNIV MINNESOTA.  
 XX  
 XX Gahr PJ, Mitchell DT, Ohlendorf D, Schlievert PM;  
 PI  
 XX WPI; 1998-333329/29.  
 XX  
 PT Mutant non-lethal Streptococcus pyrogenic exotoxin type C - useful  
 PT for vaccines to protect from biological activity of wild type toxin  
 PT e.g. to prevent or ameliorate streptococcal toxic shock syndrome  
 PT  
 XX  
 PS Claim 5; Page -: 55pp; English.  
 XX  
 CC The present sequence represents a mutant Streptococcus pyrogenic  
 CC exotoxin type C (SPE-C) toxin. Streptococcus pyrogenes is a pathogen  
 CC of humans which can cause mild infections e.g. impetigo or severe acute  
 CC diseases SPE-C is thought to be associated with streptococcal toxic  
 CC shock syndrome (STSS) and has several proposed biological activities,  
 CC e.g. has been shown to block liver clearance of endotoxin and act  
 CC as a "superantigen" i.e. induce T lymphocytes proliferation, resulting  
 CC in abnormally high levels of circulating cytokines TNF-beta and  
 CC IFN-gamma. The mutant toxins are useful in vaccines which can be  
 CC administered to animals (especially humans) to protect against at  
 CC least one biological activity of a wild-type SPE-C. Such vaccines are

CC especially useful to reduce symptoms associated with toxic shock such  
 CC as STSS in humans.  
 CC note: this sequence does not appear in the specification; it was created  
 CC using information provided.  
 CC  
 XX  
 SQ Sequence 235 AA;  
 Query Match 94.6%; Score 1165; DB 19; Length 235;  
 Best Local Similarity 96.2%; Pred. No. 4.5e-107;  
 Matches 226; Conservative 2; Mismatches 7; Indels 0; Gaps 0;  
 QY 1 MKKINIKIVFIIITVILISTFYFYHOSDKKDISNYSKSLAAYTTTPYDKCRVNFST 60  
 DB 1 MKKINIKIVFIIITVILISTFYFYHOSDKKDISNYSKSLAAYTTTPYDKCRVNFST 60  
 QY 61 THTPLNIDTOKYRKGDYIISSEMSYEASOKFRKDDHVDVGLFIYLSHTEYIGGITPA 120  
 DB 61 THTPLNIDTOKYRKGDYIISSEMSYEASOKFRKDDHVDVGLFIYLSHTEYIGGITPA 120  
 QY 121 QNNKVNHLGNLFISGESQONLNKILLEKDIYFQEIIDFKIRKYLMDNMYKIDATSPY 180  
 DB 121 QNNKVNHLGNLFISGESQONLNKILLEKDIYFQEIIDFKIRKYLMDNMYKIDATSPY 180  
 QY 181 VSGRIEIGTRKDGKHEQIDLFDSFNEGTRSDIFAKYKDNRIIMKNFSDIYLEK 235  
 DB 181 VSGRIEIGTRKDGKHEQIDLFDSFNEGTRSDIFAKYKDNRIIMKNFSDIYLEK 235  
 RESULT 7  
 AAR13210  
 ID AAR13210 standard; Protein; 208 AA.  
 XX  
 AC AAR13210;  
 XX  
 DT 15-OCT-1991 (first entry)  
 XX  
 DE Streptococcal pyrogenic enterotoxin C.  
 XX  
 KW SPE C; cancer treatment; pyrogen; tumouricide; scarlet fever.  
 XX  
 OS Streptococcus NY-5 strain.  
 XX  
 PN WO9110680-A.  
 XX  
 PD 25-JUL-1991.  
 XX  
 XX 17-JAN-1991; 91WO-US00342.  
 XX  
 XX 17-JAN-1990; 90US-0466577.  
 XX  
 XX (TERM/) TERMAN D S.  
 XX  
 XX Terman DS;  
 PI  
 XX  
 XX WPI; 1991-237984/32.  
 XX  
 PT Treating cancer with enterotoxin from Staphylococcus aureus -  
 PT administered by IV injection, having same tumoricidal activity  
 PT as Staphylococcal protein A without potential toxic reactions  
 PT  
 XX  
 PS Disclosure; Fig 1; 74pp; English.  
 XX  
 CC SPE C can be used for tumouricidal treatment, esp. with a haemolysin.  
 CC Synthetic polypeptides having structural homology to Streptococcal  
 CC pyrogenic exotoxins are claimed, provided the homology includes  
 CC statistically significant sequence homology, alignment of Cysteine  
 CC residues and similar hydropathy profiles.  
 CC See AAR13203-R13211.  
 XX  
 SQ Sequence 208 AA;  
 Query Match 89.3%; Score 1100; DB 12; Length 208;  
 Best Local Similarity 100.0%; Pred. No. 1e-100;

	Matches	208,	Conservative	0,	Mismatches	0,	Indels	0,	Gaps	0,
QY	28	DSKDISNVKSDLLAYATITTPDYKDCVNFSTHTLIMDPQYRGKDYIISSEMYEAS	87							
Db	1	DSKDISNVKSDLLAYATITTPDYKDCVNFSTHTLIMDPQYRGKDYIISSEMYEAS	60							
QY	88	QKFRDHDVADVEGLFIYLNSTHGEIYGGITPAQNNKYNHKLGLFTSGESQOMLNKI	147							
Db	61	QKFRDHDVADVEGLFIYLNSTHGEIYGGITPAQNNKYNHKLGLFTSGESQOMLNKI	120							
QY	148	ILEKDIYVFOEIDFKIRKRYLMDNKNKIYDATSPYVSGRIEIGTKDCKNHQIDLFPSNPGT	207							
Db	121	ILEKDIYVFOEIDFKIRKRYLMDNKNKIYDATSPYVSGRIEIGTKDCKNHQIDLFPSNPGT	180							
QY	208	RSDFIFAKYKDNRIIMMKNFSPHDIIYLEK	235							
Db	181	RSDFIFAKYKDNRIIMMKNFSPHDIIYLEK	208							

AA	RESULT 8
AR	AA45018
ID	AA45018 standard, protein, 208 AA.
XX	
AC	AA45018;
XX	
DT	25-MAR-2003 (updated)
DT	08-JUN-1994 (first entry)
XX	
DE	Staphylococcal enterotoxin SPE C.
XX	
KW	Staphylococcal enterotoxin; SE; cancer; tumouricidal agent;
KW	autoimmune disease; toxicity; Protein A; pertussis system.
XX	
OS	Staphylococcus aureus.

PN	MO9324136-A1.
XX	
PD	09-DEC-1993.
XX	
PF	01-JUN-1993; 93WO-US05213.
PR	01-JUN-1992; 92US-0891718.
XX	
PA	(STON/) STONE J L.
XX	
PI	(TERM/) TERMAN D S.
XX	
DR	Stone JL, Terman DS;
XX	
PT	WPI: 1993-405418/50.
PJ	
XX	
PS	Use of staphylococcal enterotoxin(s) and homologues - for treating cancer in a patient or for the treatment of auto-immune diseases
XX	
PP	
XX	
CC	Disclosure; Fig 1; 90pp; English.
CC	
CC	The sequences given in AAR45011-21 are Staphylococcal enterotoxins (SEs) which may be used in the methods of the invention for treating cancer in a patient. These SEs, and homologues of them, can be used as tumouricidal agents for treating cancers and autoimmune disease. They exhibit tumouricidal activity and toxicity identical to that observed for the Protein A perfusion system. They may be administered by i.v. injection.
CC	(updated on 25-MAR-2003 to correct PN field.)
XX	
XQ	Sequence 208 AA;

Query Match	89.3%	Score 1100;	DB 14;	Length 208;
Best Local Similarity	100.0%;	Pred. No. 1e-100;		
Matches 208;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;

28 DSKKDINWMSDLXATITPYDVKDCVANSSTHTLNLIDPQKRGKYYTISSEMSYAS 87  
 |||||||

Db	1	DSKRIISNWKSDLLAYATITTPYDXYKDCRNFTSTHTLNDITQYRKGDYIISSEMSYEAS	60
QY	88	QKFKRDDHVDVEGLEFYILNSHTGEYIYGGITPAONKNVNHKLGLNFIISGESQONLNKI	147
Db	61	QKFKRDDHVDVEGLEFYILNSHTGEYIYGGITPAONKNVNHKLGLNFIISGESQONLNKI	120
QY	148	IIEKQIVFOEIDFKIRKYLMDNRYKYDATSPVSGRIETGKDGKHEQIDLDFDSNEGT	207
Db	121	IIEKQIVFOEIDFKIRKYLMDNRYKYDATSPVSGRIETGKDGKHEQIDLDFDSNEGT	180
QY	208	RSDFIAKYYDNRIINMKNFSDIYLEK	235
Db	181	RSDFIAKYYDNRIINMKNFSDIYLEK	208

RESULT 9	
AAB67345	
ID	AAB67345 standard; peptide: 208 AA.
XX	
AC	AAB67345;
XX	
DT	23-APR-2001 (first entry)
XX	
DE	Streptococcus pyogenes toxin C protein..
XX	
KW	Tumour; cancer; immune; enterotoxin.
XX	
OS	Streptococcus pyogenes.

PN	US6180097-B1.
XX	
PD	30-JAN-2001.
XX	
PF	30-OCT-1998; 98US-018437.
XX	
PR	31-JAN-1994; 94US-0189424.
PR	19-JUN-1995; 95US-0491746.
PR	03-OCT-1989; 89US-0416530.
PR	17-JAN-1990; 90US-0466577.
PR	17-JAN-1991; 91WO-US00342.
PR	01-JUN-1992; 92US-0891718.
PR	02-MAR-1993; 93US-0025144.
XX	
PA	(TERM.) TERMAN D. S.
XX	
PI	Terman DS;
XX	
DR	WPI; 2001-158657/16.
XX	
PT	Tumor cell capable of stimulating antitumor immune reactivity in vitro
PT	or in vivo comprises exogenous nucleic acids encoding a superantigen
PT	and a costimulatory molecule
XX	
PS	Disclosure; Fig 2; 16pp; English.
XX	
CC	The present invention relates to a tumour cell capable of stimulating
CC	antitumor immune reactivity in vitro or in vivo contains and
CC	expresses an exogenous nucleic acid molecule encoding a superantigen
CC	or its active fragment and an exogenous nucleic acid molecule
CC	encoding a costimulatory molecule that activates T cells in
CC	conjunction with an antigenic stimulus. The invention may be used
CC	for cancer therapy by stimulating an anticancer immune response
CC	in vivo or ex vivo.
XX	
SO	Sequence 208 AA;

[illegible]

QY 88 QKFRDHDVDFGLFYLINSHTGEYIGGITPPAONNVNKKLGNLFISGESQONLNKI 147  
 |||||||  
 DB 61 QKFRDHDVDFGLFYLINSHTGEYIGGITPPAONNVNKKLGNLFISGESQONLNKI 120  
 |||||||  
 QY 148 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVYSGRIEIGTKDGKHEQIDLPSPNEG 207  
 |||||||  
 DB 121 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVYSGRIEIGTKDGKHEQIDLPSPNEG 180  
 |||||||  
 QY 208 RSDIFAKYKDNRIITNMKNFSHPDIYLER 235  
 |||||||  
 DB 181 RSDIFAKYKDNRIITNMKNFSHPDIYLER 208  
 |||||||  
 RESULT 10  
 ID ABB76241 standard; Protein; 208 AA.  
 AC ABB76241;  
 XX  
 DT 09-AUG-2002 (first entry)  
 XX  
 DE Staphylococcus pyogenes exotoxin C.  
 XX  
 KM Exotoxin C; SPE C; superantigen; antigen; tumour; cancer;  
 KM antitumour; therapy.  
 XX  
 OS Streptococcus pyogenes.  
 XX  
 PN US2002051765-A1.  
 PD  
 XX 02-MAY-2002.  
 PF 19-DEC-2000; 2000US-0741503.  
 XX  
 PR 31-JAN-1994; 94US-0189424.  
 PR 19-JUN-1995; 95US-0491746.  
 PR 03-OCT-1989; 89US-0416530.  
 PR 17-JAN-1990; 90US-0466577.  
 PR 17-JAN-1991; 91MO-US00342.  
 PR 01-JUN-1992; 92US-0891718.  
 PR 02-MAR-1993; 93US-0025144.  
 XX  
 PA (TERM/) TERMAN D S.  
 XX  
 PI Terman DS;  
 XX  
 DR WPI: 2002-415198/44.  
 XX  
 PT Reagent for treating cancer without the need for e.g. radiotherapy,  
 PT comprises a specific V beta subset of T cells sensitized to a growing  
 PT tumor and stimulated with superantigens  
 XX  
 PS Disclosure; Fig 2; 17pp; English.  
 XX  
 CC The present sequence is the protein sequence of exotoxin C (SPE C)  
 CC of Streptococcus pyogenes. Similarly is shown, in several  
 CC stretches of sequence, between staphylococcal enterotoxins,  
 CC streptococcal pyrogenic exotoxins and staphylococcal exfoliative  
 CC toxins (see ABB76234-44). In the present invention, synthetic  
 CC polypeptides useful in tumour therapy and in blocking or destroying  
 CC autoractive T and B lymphocyte populations are characterised by  
 CC substantial structural homology to staphylococcal enterotoxin A and  
 CC enterotoxin B, and to streptococcal pyrogenic exotoxins, with  
 CC statistically significant sequence homology and similarity (Z value  
 CC of Lipman and Pearson algorithm in Monte Carlo analysis exceeding  
 CC 6) to include alignment of cysteine residues and similar hydrophatic  
 CC profiles. These superantigens are used to treat solid tumours,  
 CC including their metastases, without radiation, surgery or  
 CC standard chemotherapeutic agents. A claimed method of human cancer  
 CC treatment involves contacting haematopoietic cells from a patient  
 CC with one or more superantigens ex vivo to generate stimulated cells,  
 CC selecting a specific V beta subset of cells, and reintroducing

CC these cells into the patient to induce an in vivo therapeutic,  
 CC tumouricidal reaction.  
 CC  
 SQ Sequence 208 AA;  
 Query Match 89.3%; Score 1100; DB 23; Length 208;  
 Best Local Similarity 100.0%; Pred. No. 1e-100;  
 Matches 208; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 QY 28 DSKKDINVKSDLLIYATTPYDKDCRVNFTHTLINTOKYRGDYIISSEMSYEAS 87  
 |||||||  
 DB 1 DSKKDINVKSDLLIYATTPYDKDCRVNFTHTLINTOKYRGDYIISSEMSYEAS 60  
 |||||||  
 QY 88 QKFRDHDVDFGLFYLINSHTGEYIGGITPPAONNVNKKLGNLFISGESQONLNKI 147  
 |||||||  
 DB 61 QKFRDHDVDFGLFYLINSHTGEYIGGITPPAONNVNKKLGNLFISGESQONLNKI 120  
 |||||||  
 QY 148 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVYSGRIEIGTKDGKHEQIDLPSPNEG 207  
 |||||||  
 DB 121 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVYSGRIEIGTKDGKHEQIDLPSPNEG 180  
 |||||||  
 QY 208 RSDIFAKYKDNRIITNMKNFSHPDIYLER 235  
 |||||||  
 DB 181 RSDIFAKYKDNRIITNMKNFSHPDIYLER 208  
 |||||||  
 RESULT 11  
 ID AAE25364 standard; Protein; 207 AA.  
 AC AAE25364;  
 XX  
 DT 30-OCT-2002 (first entry)  
 XX  
 DE Streptococcus pyogenes pyrogenic exotoxin C (SPE) wild-type protein.  
 XX  
 KM Immunomodulator; antigen-presenting-cell; APC; immune system; infection;  
 KM autoimmunity; allergy; neoplastic; antibiotic; virucide; parasiticide;  
 KM immunosuppressive; Streptococcus pyogenes pyrogenic exotoxin C; SPEC;  
 KM fungicide; cytostatic.  
 XX  
 OS Streptococcus pyogenes.  
 XX  
 PN WO200245739-A1.  
 PD  
 XX 13-JUN-2002.  
 PF 04-DEC-2001; 2001WO-NZ00267.  
 XX  
 PR 04-DEC-2000; 2000US-251243P.  
 XX  
 PA (AUCK-) AUCKLAND UNISERVICES LTD.  
 XX  
 PI Fraser JD, Nicholson MJ;  
 XX  
 DR WPI: 2002-537539/57.  
 DR N-PSDB: AAD41385.  
 XX  
 PT Immunomodulator comprising an antigen-presenting-cell targeting  
 PT molecule coupled to an immunomodulatory antigen, useful for treating  
 PT e.g. bacterial, viral, fungal or parasitic infections, autoimmunity and  
 PT allergy  
 XX  
 PS Example 3; Page 16; 47pp; English.  
 XX  
 CC The present invention relates to a novel immunomodulator comprising an  
 CC antigen-presenting-cell (APC) targeting molecule (which mimics a super-  
 CC antigen but does not include a fully functional T-cell receptor binding  
 CC site) coupled to an immunomodulatory antigen. The APC-targeting molecule  
 CC is Streptococcus pyogenes pyrogenic exotoxin C (SPEC) or SWE2 or SEA. The  
 CC immunomodulator is useful for the treatment of disorders which require  
 CC induction or stimulation of the immune system, including viral, fungal,  
 CC bacterial, or parasitic infections, autoimmunity, allergy and neoplastic

or pre-neoplastic transformation. The present sequence is S. pyogenes pyrogenic exotoxin C (SPEC) wild-type protein. This sequence is used in the exemplification of the invention.

Sequence 207 AA:

Query Match 88.9%; Score 1095; DB 23; Length 207;  
Best Local Similarity 100.0%; Pred. No. 3.2e-100;  
Matches 207; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 28 DSKKDINVKSDLLAYATITPYDKDCRVNFTHTLTINIDQYRGKDYIISSEMSYEAS 87  
DB 1 DSKKDINVKSDLLAYATITPYDKDCRVNFTHTLTINIDQYRGKDYIISSEMSYEAS 60  
QY 88 QKFRDHDVDFGLFYILNSHTGEYIYGITTPAONNNVNHKLGELFISGESQONLNKI 147  
DB 61 QKFRDHDVDFGLFYILNSHTGEYIYGITTPAONNNVNHKLGELFISGESQONLNKI 120  
QY 148 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPIVSGRIEIGTKDGKHEQIDLFDSPNEG 207  
DB 121 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPIVSGRIEIGTKDGKHEQIDLFDSPNEG 180  
QY 208 RSDIFAKYKDNRIINMKNFHFIDYLE 234  
DB 181 RSDIFAKYKDNRIINMKNFHFIDYLE 207

RESULT 12  
AAE25373  
ID AAE25373 standard; Protein: 207 AA.

30-OCT-2002 (first entry)

S. pyogenes pyrogenic exotoxin C mutant protein (R181Q).

Immunomodulator: antigen-presenting-cell; APC; immune system; infection;  
autoimmunity; allergy; neoplastic; antibiotic; virucide; parasiticide;  
immunosuppressive; Streptococcus pyogenes pyrogenic exotoxin C; SPEC;  
fungicide; cytostatic; mutant; mutein.

Streptococcus pyogenes.  
Synthetic.

Key. Location/Qualifiers  
FT Misc-difference 181  
/note= "Wild-type Arg substituted with Gln"

WO200245739-A1.

13-JUN-2002.

04-DEC-2001; 2001WO-NZ00267.

04-DEC-2000; 2000US-251243P.

(AUCC-) AUCKLAND UNISERVICES LTD.

Fraser JD, Nicholson MJ;

WPI; 2002-537539/57.

Immunomodulator comprising an antigen-presenting-cell targeting  
molecule coupled to an immunomodulatory antigen, useful for treating  
e.g. bacterial, viral, fungal or parasitic infections, autoimmunity and  
allergy

Example 4; Page -: 47pp; English.

The present invention relates to a novel immunomodulator comprising an  
antigen-presenting-cell (APC) targeting molecule (which mimics a super-  
antigen but does not include a fully functional T-cell receptor binding

site) coupled to an immunomodulatory antigen. The APC-targeting molecule  
is Streptococcus pyogenes pyrogenic exotoxin C (SPEC) or SME2 or SEA. The  
immunomodulator is useful for the treatment of disorders which require  
induction or stimulation of the immune system, including viral, fungal,  
bacterial, or parasitic infections, autoimmunity, allergy and neoplastic  
or pre-neoplastic transformation. The present sequence is S. pyogenes  
pyrogenic exotoxin C (SPEC) mutant protein (R181Q). This sequence is used  
in the exemplification of the invention.  
Note: This sequence is not shown in the specification but is derived  
from the wild-type SPEC protein shown in page 16 of the specification  
(AAE25364).

Sequence 207 AA:

Query Match 88.6%; Score 1091; DB 23; Length 207;  
Best Local Similarity 99.5%; Pred. No. 8e-100;  
Matches 206; Conservative 1; Mismatches 0; Indels 0; Gaps 0;

QY 28 DSKKDINVKSDLLAYATITPYDKDCRVNFTHTLTINIDQYRGKDYIISSEMSYEAS 87  
DB 1 DSKKDINVKSDLLAYATITPYDKDCRVNFTHTLTINIDQYRGKDYIISSEMSYEAS 60  
QY 88 QKFRDHDVDFGLFYILNSHTGEYIYGITTPAONNNVNHKLGELFISGESQONLNKI 147  
DB 61 QKFRDHDVDFGLFYILNSHTGEYIYGITTPAONNNVNHKLGELFISGESQONLNKI 120  
QY 148 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPIVSGRIEIGTKDGKHEQIDLFDSPNEG 207  
DB 121 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPIVSGRIEIGTKDGKHEQIDLFDSPNEG 180  
QY 208 RSDIFAKYKDNRIINMKNFHFIDYLE 234  
DB 181 QSDIFAKYKDNRIINMKNFHFIDYLE 207

RESULT 13  
AAE25368  
ID AAE25368 standard; Protein: 207 AA.

AAE25368;

30-OCT-2002 (first entry)

S. pyogenes pyrogenic exotoxin C mutant protein (Y15A).

Immunomodulator: antigen-presenting-cell; APC; immune system; infection;  
autoimmunity; allergy; neoplastic; antibiotic; virucide; parasiticide;  
immunosuppressive; Streptococcus pyogenes pyrogenic exotoxin C; SPEC;  
fungicide; cytostatic; mutant; mutein.

Streptococcus pyogenes.  
Synthetic.

Key. Location/Qualifiers  
FT Misc-difference 15  
/note= "Wild-type Tyr substituted with Ala"

WO200245739-A1.

13-JUN-2002.

04-DEC-2001; 2001WO-NZ00267.

04-DEC-2000; 2000US-251243P.

(AUCC-) AUCKLAND UNISERVICES LTD.

Fraser JD, Nicholson MJ;

WPI; 2002-537539/57.

Immunomodulator comprising an antigen-presenting-cell targeting  
molecule coupled to an immunomodulatory antigen, useful for treating



PT e.g. bacterial, viral, fungal or parasitic infections, autoimmunity and  
 XX allergy -  
 PS Claim 32, Page -: 47pp: English.  
 CC The present invention relates to a novel immunomodulator comprising an  
 CC antigen-presenting-cell (APC) targeting molecule (which mimics a super-  
 CC antigen but does not include a fully functional T-cell receptor binding  
 CC site) coupled to an immunomodulatory antigen. The APC-targeting molecule  
 CC is Streptococcus pyogenes pyrogenic exotoxin C (SPEc) or SMeZ or SEA. The  
 CC immunomodulator is useful for the treatment of disorders which require  
 CC induction or stimulation of the immune system, including viral, fungal,  
 CC bacterial, or parasitic infections, autoimmunity, allergy and neoplastic  
 CC or pre-neoplastic transformation. The present sequence is S. pyogenes  
 CC pyrogenic exotoxin C (SPEc) mutant protein (Y15A). This sequence is used  
 CC in the exemplification of the invention.  
 CC Note: This sequence is not shown in the specification but is derived  
 CC from the wild-type SPEc protein shown in page 16 of the specification  
 CC (AAE25364).  
 CC  
 SQ Sequence 207 AA;  
 Query Match 88.1%; Score 1086; DB 23; Length 207;  
 Best Local Similarity 99.5%; Pred. No. 2.5e-99;  
 Matches 206; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 OY 28 DSKKDISNVKSDLLVATTPYDYKDCRVNSTHTLINDTQYRGKDYISSEMSYEAS 87  
 DB 1 DSKKDISNVKSDLLVATTPYDYKDCRVNSTHTLINDTQYRGKDYISSEMSYEAS 60  
 OY 88 QKFRDHDVDFGLFYILNSHTGEYIGGTPPAONNVNKKLGNLFISGESQONLNKI 147  
 DB 61 QKFRDHDVDFGLFYILNSHTGEYIGGTPPAONNVNKKLGNLFISGESQONLNKI 120  
 OY 148 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVSGRIEIGTQDKGHEQIDLPSPNEG 207  
 DB 121 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVSGRIEIGTQDKGHEQIDLPSPNEG 180  
 OY 208 RSDIFAKYKDNRIINMKNFSPDIYLE 234  
 DB 181 RSDIFAKYKDNRIINMKNFSPDIYLE 207  
 RESULT 14  
 ID AAE25374 standard; protein: 207 AA.  
 XX AAE25374;  
 AC 30-OCT-2002 (first entry)  
 DT 30-OCT-2002 (first entry)  
 XX  
 DE S. pyogenes pyrogenic exotoxin C mutant protein (N79C).  
 KW Immunomodulator; antigen-presenting-cell; APC; immune system; infection;  
 KW autoimmunity; allergy; neoplastic; antibiotic; virucide; parasiticide;  
 KW immunosuppressive; Streptococcus pyogenes pyrogenic exotoxin C; SPEc;  
 KW fungicide; cytostatic; mutant; mutain.  
 XX  
 OS Streptococcus pyogenes.  
 OS Synthetic.  
 XX  
 FH Key Location/Qualifiers  
 FT MISC-difference 79 /note= "Wild-type Asn substituted with Cys"  
 XX  
 PN WO200245739-A1.  
 XX  
 PD 13-JUN-2002.  
 XX  
 PF 04-DEC-2001; 2001MO-N00267.  
 XX  
 PR 04-DEC-2000; 2000US-251243P.  
 XX

PA (AUCC-) AUCCLAND UNISERVICES LTD.  
 XX  
 PI Fraser JD, Nicholson MJ;  
 XX  
 DR WPI; 2002-537539/57.  
 XX  
 PT Immunomodulator comprising an antigen-presenting-cell targeting  
 PT molecule coupled to an immunomodulatory antigen, useful for treating  
 PT e.g. bacterial, viral, fungal or parasitic infections, autoimmunity and  
 PT allergy -  
 XX  
 PS Example 4; Page -: 47pp: English.  
 CC The present invention relates to a novel immunomodulator comprising an  
 CC antigen-presenting-cell (APC) targeting molecule (which mimics a super-  
 CC antigen but does not include a fully functional T-cell receptor binding  
 CC site) coupled to an immunomodulatory antigen. The APC-targeting molecule  
 CC is Streptococcus pyogenes pyrogenic exotoxin C (SPEc) or SMeZ or SEA. The  
 CC immunomodulator is useful for the treatment of disorders which require  
 CC induction or stimulation of the immune system, including viral, fungal,  
 CC bacterial, or parasitic infections, autoimmunity, allergy and neoplastic  
 CC or pre-neoplastic transformation. The present sequence is S. pyogenes  
 CC pyrogenic exotoxin C (SPEc) mutant protein (N79C). This sequence is used  
 CC in the exemplification of the invention.  
 CC Note: This sequence is not shown in the specification but is derived  
 CC from the wild-type SPEc protein shown in page 16 of the specification  
 CC (AAE25364).  
 CC  
 SQ Sequence 207 AA;  
 Query Match 88.1%; Score 1086; DB 23; Length 207;  
 Best Local Similarity 99.5%; Pred. No. 2.5e-99;  
 Matches 206; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
 OY 28 DSKKDISNVKSDLLVATTPYDYKDCRVNSTHTLINDTQYRGKDYISSEMSYEAS 87  
 DB 1 DSKKDISNVKSDLLVATTPYDYKDCRVNSTHTLINDTQYRGKDYISSEMSYEAS 60  
 OY 88 QKFRDHDVDFGLFYILNSHTGEYIGGTPPAONNVNKKLGNLFISGESQONLNKI 147  
 DB 61 QKFRDHDVDFGLFYILNSHTGEYIGGTPPAONNVNKKLGNLFISGESQONLNKI 120  
 OY 148 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVSGRIEIGTQDKGHEQIDLPSPNEG 207  
 DB 121 ILEKDIYTFQEIPIKIRKYLMDNKKIYDATSPVSGRIEIGTQDKGHEQIDLPSPNEG 180  
 OY 208 RSDIFAKYKDNRIINMKNFSPDIYLE 234  
 DB 181 RSDIFAKYKDNRIINMKNFSPDIYLE 207  
 RESULT 15  
 ID AAE25395 standard; protein: 207 AA.  
 XX AAE25395;  
 AC 30-OCT-2002 (first entry)  
 DT 30-OCT-2002 (first entry)  
 XX  
 DE S. pyogenes pyrogenic exotoxin C mutant protein (Y15C).  
 KW Immunomodulator; antigen-presenting-cell; APC; immune system; infection;  
 KW autoimmunity; allergy; neoplastic; antibiotic; virucide; parasiticide;  
 KW immunosuppressive; Streptococcus pyogenes pyrogenic exotoxin C; SPEc;  
 KW fungicide; cytostatic; mutant; mutain.  
 XX  
 OS Streptococcus pyogenes.  
 OS Synthetic.  
 XX  
 FH Key Location/Qualifiers  
 FT MISC-difference 15 /note= "Wild-type Tyr substituted with Cys"  
 XX

